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EXAMINER	
SINGH, DALZID E	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/837,769	Applicant(s) HONG ET AL.
	Examiner Dalzid Singh	Art Unit 2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 6 and 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanson et al (US Patent No. 6,580,531) in view of Itou et al (US Patent No. 5,822,112).

Regarding claim 1, Swanson et al disclose testing of optical system, as shown in Fig. 1, including noise injection/loading circuit (such as 26, 28 and 34) for use in noise loading an optical network (in col. 4, lines 25-28, Swanson et al disclose that the optical system may be employed in communication device, such as an optical repeater or an optical network switch; since optical switch is part of the optical network, therefore the noise injection/loading circuit can be used for noise loading an optical network), said noise injection/loading circuit comprising:

an optical noise injection/loading amplifier for applying noise to the optical network (as shown in Fig. 1, Swanson et al show optical amplifier (28), see col. 4, lines 57-58; it is well known that optical amplifier produces noise such as ASE noise (see col. 2, lines 27-28), therefore since the optical amplifier is in the transmission line, noise generated by the optical amplifier is injected/loaded onto the signal); and

an optical attenuator (26) connected in series with the optical noise injection/loading amplifier (28) for receiving the signals to be applied to the noise injection/loading amplifier and for attenuating the signal to adjust the signal to noise ratio of output from the noise injection/loading amplifier (in col. 4, lines 56-60, Swanson et al discloses that the combination of the variable attenuator and the optical amplifier operates to produced a desired signal to noise ratio; for example, the signal can be adjusted by the attenuator to either have large or small attenuation before going into the amplifier and hence signal to noise ratio can be adjusted).

Swanson et al disclose that the optical amplifier may optionally be controlled (see col. 4, lines 60-62) and differ from the claimed invention in that Swanson et al do not specifically disclose that the amplifier is configured to output at a fixed power level. However, adjusting the output power level of the optical amplifier to be at a fixed level is well known. Itou et al is cited to show such well known concept. In col. 1, lines 61-65, Itou et al teach method of maintaining output power of an optical amplifier at a constant or fixed power level. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the optical amplifier of Swanson et al to output a fixed power level as taught by Itou et al. Optical signal power fluctuation due to transmission loss or add/drop of optical signal can degrade signal quality. Therefore, one of ordinary skill in the art would have been motivated to maintain a fixed power level of the optical amplifier in order to compensate power loss and increase signal to noise ratio.

Regarding claim 2, as shown in Fig. 2, Swanson et al show a second optical attenuator (34) for adjusting power of the output for the noise injection/loading amplifier to an appropriate level for a receiver.

Regarding claim 3, Swanson et al discloses that the optical attenuator is tunable or variable (see col. 4, line 56).

Regarding claim 6, Swanson et al disclose that the optical amplifier may optionally be controlled (see col. 4, lines 60-62) and differ from the claimed invention in that Swanson et al do not specifically disclose that the amplifier is configured to output at a fixed power level. However, adjusting the output power level of the optical amplifier to be at a fixed level is well known. Itou et al is cited to show such well known concept. In col. 1, lines 61-65, Itou et al teach method of maintaining output power of an optical amplifier at a constant or fixed power level. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the optical amplifier of Swanson et al to output a fixed power level as taught by Itou et al. Optical signal power fluctuation due to transmission loss or add/drop of optical signal can degrade signal quality. Therefore, one of ordinary skill in the art would have been motivated to maintain a fixed power level of the optical amplifier in order to compensate power loss and increase signal to noise ratio.

Regarding claim 8, Swanson et al disclose testing of optical system, as shown in Fig. 1, including noise injection/loading circuit (such as 26, 28 and 34) for use in noise loading an optical network (in col. 4, lines 25-28, Swanson et al disclose that the optical system may be employed in communication device, such as an optical repeater or an

optical network switch; since optical switch is part of the optical network, therefore the noise injection/loading circuit can be used for noise loading an optical network), said noise injection/loading circuit comprising:

an optical noise injection/loading amplifier for applying noise to the optical network (as shown in Fig. 1, Swanson et al show optical amplifier (28), see col. 4, lines 57-58; it is well known that optical amplifier produces noise such as ASE noise (see col. 2, lines 27-28), therefore since the optical amplifier is in the transmission line, noise generated by the optical amplifier is injected/loaded onto the signal); and

an optical attenuator (26) connected in series with the optical noise injection/loading amplifier (28) for receiving the signals to be applied to the noise injection/loading amplifier and for attenuating the signal to adjust the signal to noise ratio of output from the noise injection/loading amplifier (in col. 4, lines 56-60, Swanson et al discloses that the combination of the variable attenuator and the optical amplifier operates to produced a desired signal to noise ratio; for example, the signal can be adjusted by the attenuator to either have large or small attenuation before going into the amplifier and hence signal to noise ratio can be adjusted).

Swanson et al disclose that the optical amplifier may optionally be controlled (see col. 4, lines 60-62) and differ from the claimed invention in that Swanson et al do not specifically disclose that the amplifier is configured to output at a fixed power level. However, adjusting the output power level of the optical amplifier to be at a fixed level is well known. Itou et al is cited to show such well known concept. In col. 1, lines 61-65, Itou et al teach method of maintaining output power of an optical amplifier at a constant

or fixed power level. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the optical amplifier of Swanson et al to output a fixed power level as taught by Itou et al. Optical signal power fluctuation due to transmission loss or add/drop of optical signal can degrade signal quality. Therefore, one of ordinary skill in the art would have been motivated to maintain a fixed power level of the optical amplifier in order to compensate power loss and increase signal to noise ratio.

Furthermore, the combination of Swanson et al and Itou et al does not disclose an optical network. However, as discussed above since the system can be used in an optical switch network, therefore it would have been obvious to incorporate the optical system of Swanson et al to an optical network. One of ordinary skill in the art would have been motivated to do such in order to test and determine communication parameters across various nodes.

Furthermore, the combination shows optical transmitter (10), as shown in Fig. 1 of Swanson et al, and differs from the claimed invention in that the combination does not specifically disclose transmitting a test signal. However, in col. 4, lines 19-28, Swanson et al disclose testing the optical system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to transmit a test signal. One of ordinary skill in the art would have been motivated to do such in order to test various system parameters.

Regarding claim 9, in Fig. 1, Swanson et al show a receiver (50) for receiving output from the noise injection/loading circuit (noise injection/loading circuit comprises of variable optical attenuators (26 and 34), noise injection/loading amplifier (28)).

Regarding claim 10, as shown in Fig. 1, Swanson et al show a Bit Error Rate Tester (BERT) (52) for measuring BER of output received at the receiver (50).

Regarding claim 11, as shown in Fig. 1, Swanson et al show that the BERT (52) has a module in communication with the transmitter and a module in communication with the receiver (as shown in Fig. 1, BERT (52) is coupled to both the transmitter (10) and receiver (50); therefore it would have been obvious that there must be a module within the BERT to communicate with both the transmitter and the receiver).

Regarding claim 12, the combination of Swanson et al and Itou et al differ from the claimed invention in that the combination does not disclose an optical network and does not indicate that the noise injection/loading circuit is positioned between the optical network and the receiver. However, as discussed above since the system can be used in an optical switch network, therefore it would have been obvious to incorporate the optical system of Swanson et al to an optical network. Furthermore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to position the noise injection/loading circuit between the optical network and the receiver. One of ordinary skill in the art would have been motivated to do such in order to measure various parameters of the optical signal coming from the optical network.

Regarding claim 13, as shown in Fig. 1, Swanson et al show the noise injection/loading circuit includes a second optical attenuator (34) for adjusting output

from the optical noise loading amplifier to an appropriate power level for the receiver (50).

Regarding claim 14, in col. 4, line 56, Swanson et al disclose that the optical attenuator is tunable or variable.

Regarding claim 15, Swanson et al disclose testing of optical system, as shown in Fig. 1, including noise injection/loading circuit (such as 26, 28 and 34) for use in noise loading an optical network (in col. 4, lines 25-28, Swanson et al disclose that the optical system may be employed in communication device, such as an optical repeater or an optical network switch; since optical switch is part of the optical network, therefore the noise injection/loading circuit can be used for noise loading an optical network), said noise injection/loading circuit comprising:

an optical noise injection/loading amplifier for applying noise to the optical network (as shown in Fig. 1, Swanson et al show optical amplifier (28), see col. 4, lines 57-58; it is well known that optical amplifier produces noise such as ASE noise (see col. 2, lines 27-28), therefore since the optical amplifier is in the transmission line, noise generated by the optical amplifier is injected/loaded onto the signal); and

an optical attenuator (26) connected in series with the optical noise injection/loading amplifier (28) for receiving the signals to be applied to the noise injection/loading amplifier and for attenuating the signal to adjust the signal to noise ratio of output from the noise injection/loading amplifier (in col. 4, lines 56-60, Swanson et al discloses that the combination of the variable attenuator and the optical amplifier operates to produced a desired signal to noise ratio; for example, the signal can be

adjusted by the attenuator to either have large or small attenuation before going into the amplifier and hence signal to noise ratio can be adjusted);

setting the optical attenuator to a first level of attenuation (see Fig. 5 and col. 9, lines 65-66 and col. 10, lines 27-31);

calculating a first measurement of a performance metric (see Fig. 5 and col. 9, lines 60-67 to col. 10, lines 1-35; the first measurement is performed by the wavemeter);

setting the optical attenuator to a second level of attenuation (see Fig. 5 and col. 10, lines 5-12); and

calculating a second measurement of a performance metric (see Fig. 5 and col. 10, lines 1-35; the second measurement is performed by the receiver).

Swanson et al disclose that the optical amplifier may optionally be controlled (see col. 4, lines 60-62) and differ from the claimed invention in that Swanson et al do not specifically disclose that the amplifier is configured to output at a fixed power level. However, adjusting the output power level of the optical amplifier to be at a fixed level is well known. Itou et al is cited to show such well known concept. In col. 1, lines 61-65, Itou et al teach method of maintaining output power of an optical amplifier at a constant or fixed power level. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the optical amplifier of Swanson et al to output a fixed power level as taught by Itou et al. Optical signal power fluctuation due to transmission loss or add/drop of optical signal can degrade signal quality. Therefore, one of ordinary skill in the art would have been motivated to maintain a fixed

power level of the optical amplifier in order to compensate power loss and increase signal to noise ratio.

Furthermore, the combination of Swanson et al and Itou et al does not disclose an optical network. However, as discussed above since the system can be used in an optical switch network, therefore it would have been obvious to incorporate the optical system of Swanson et al to an optical network. One of ordinary skill in the art would have been motivated to do such in order to test and determine communication parameters across various nodes.

Furthermore, the combination shows optical transmitter (10), as shown in Fig. 1 of Swanson et al, and differs from the claimed invention in that the combination does not specifically disclose transmitting a test signal. However, in col. 4, lines 19-28, Swanson et al disclose testing the optical system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to transmit a test signal. One of ordinary skill in the art would have been motivated to do such in order to test various system parameters.

Regarding claim 16, Swanson et al disclose that the performance metric is Bit Error Ratio (BER)(bit error rate is a measure of performance metric).

Regarding claim 17, Swanson et al disclose that the optical attenuator is set to the first level of attenuation to achieve a first optical signal to noise (OSNR) ratio (see col. 9, lines 65-67 to col. 10, lines 1-2).

Regarding claim 18, Swanson et al disclose that the optical attenuator is set to the second level of attenuation to achieve a second optical signal to noise ratio (OSNR)

(in col. 10, lines 27-31; the optical attenuator is adjusted several times in order to achieved a desired OSNR; therefore it would have been obvious to indicate that the attenuator is set to a second level the second time the adjustment is made).

Regarding claim 19, Swanson et al disclose that the step of composing the first measurement and the second measurement of the performance metric to determine if the optical network behaves as anticipated (Swanson et al measure the performance metric several times until a desired measurement is achieved, see col. 10, lines 31-43, therefore the measurement composed of first and second measurement of the performance metric).

Regarding claim 20, as shown in Fig. 1, Swanson et al show that the step of attenuating output from the optical noise injection/loading amplifier (output of the optical noise injection/loading amplifier is adjusted by attenuator (34)).

3. Claims 4, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swanson et al (US Patent No. 6,580,531).

Regarding claim 4, Swanson et al disclose optical system comprising the steps:

attenuating channel power of the optical signal (variable optical attenuator (26) attenuates channel power of the optical signal);

adding noise to the optical signal (as shown in Fig. 1, Swanson et al show optical amplifier (28), see col. 4, lines 57-58; it is well known that optical amplifier produces noise such as ASE noise (see col. 2, lines 27-28), therefore since the optical amplifier is

in the transmission line, noise generated by the optical amplifier is added to the optical signal); and

calculating the BER based on the optical signal received at the receiver (in col. 3, lines 12-16, Swanson et al discloses determination of bit error rate (BER); Fig. 1, shows BER tester is coupled to the receiver; therefore BER is tested based on the optical signal received at the receiver).

Swanson et al, in col. 4, lines 25-28, disclose that the optical system may be employed in communication device, such as an optical network switch which is part of the optical network and differ from the claimed invention in that Swanson et al do not disclose transmission of an optical test signal to the optical network. However, in col. 4, lines 19-28, Swanson et al disclose testing the optical system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to transmit a test signal. One of ordinary skill in the art would have been motivated to do such in order to test various system parameters.

Regarding claim 5, as shown in Fig. 1, Swanson et al show that the noise is created by a one-stage noise-loading amplifier (only a single optical amplifier is shown).

Regarding claim 7, Swanson et al disclose that the attenuating is done to establish a given optical signal noise ratio (in col. 4, lines 56-60, Swanson et al disclose variable optical attenuator to adjust the optical signal to noise ratio).

Response to Arguments

4. Applicant's arguments filed 15 December 2004 have been fully considered but they are not persuasive.

5. Applicant argues that the primary reference, Swanson et al, fails to teach or suggest applying the output of the optical amplifier to the optical network either directly or through an attenuator. However, such limitation is not found in the claim. As discussed in the rejection, Swanson et al teach optical amplifier coupled to the optical network switch. Since the switch is part of the network, therefore the amplifier, which is coupled to the switch is also part of the network (see col. 4, lines 24-27). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., applying the output of the optical amplifier to the optical network **either directly or through an attenuator**) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant argues that Swanson et al fails to disclose optical attenuator connected in series with the optical noise injection/loading amplifier. Since optical amplifier generates noise (see col. 2, lines 25-32), therefore, such optical amplifier can be considered as noise injection/loading amplifier. As shown in Fig. 1, Swanson et al show that optical attenuator (26 or 34) coupled in series to the noise injection/loading amplifier.

Applicant argues that Swanson et al fails to teach or suggest that the amplifier is configured to output at fixed power level. However, as discussed in the rejection, a secondary reference, Itou et al, is provided to teach that it is well known for optical amplifier to output at fixed power level. In col. 1, lines 61-65, Itou et al teach method of maintaining output power of an optical amplifier at a constant or fixed power level. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the optical amplifier of Swanson et al to output a fixed power level as taught by Itou et al in order to compensate power loss and increase signal to noise ratio. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that Swanson et al fails to teach or suggest a second optical attenuator adjusting power of the output for the noise loading amplifier. However, as shown in Fig. 1, Swanson et al show two optical attenuators (26 and 34) coupled to the noise loading amplifier (28).

Applicant argues that Swanson et al fails to teach or suggest one-stage noise loading amplifier. However, as shown in Fig. 1, Swanson et al show only one noise-loading amplifier (28), therefore it would have been obvious to consider such amplifier as one stage noise-loading amplifier. Further, applicant argues that the optical amplifier of Swanson et al does not create noise to be added to an optical test signal. However,

since the optical amplifier is coupled to the network through a network switch, therefore, if a test signal is transmitted in the network, then noise could be added to such test signal.

6. Applicant argues that Swanson et al fails to teach or suggest the step of setting the first optical attenuator to a second level of attenuation. However, such limitation is not found in claim 15. Claim 15 requires only one attenuator. In Fig. 5, Swanson et al show flow diagram wherein optical attenuator is adjusted is a control loop. Therefore, such attenuator could be adjusted to a different value or second level based on the measured signal quality. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **only one** optical attenuator is required) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272--3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
June 11, 2005

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER